

CLAIMS:

What is claimed is:

1-34. (cancelled)

35. (new) Method for deciding whether to reuse or reject a refractory plate of a slide gate valve used for control of flow of a molten metal during pouring of said metal from an upper vessel towards a lower vessel, said plate having a plate use history, said method comprising: identifying a set of parameters, at least one of said parameters being measured during the pouring and at least one of said parameters being proper to the plate; determining values of the parameters during successive uses of the plate; comparing the determined values to threshold values; and deciding to reuse the plate if the determined values do not reach the threshold values, and deciding to reject the plate if the determined values exceed the threshold values.

36. (new) The method of claim 35, wherein the refractory plate is configured to be displaced within the slide gate valve by a valve cylinder having a valve cylinder end, and wherein the parameter measured during pouring is selected from the group consisting of:

- a) pouring flow rate,
- b) relative plate displacement,
- c) position of the valve cylinder end,
- d) hydraulic pressure on the valve cylinder,
- e) pressure exerted by the molten metal in the upper vessel,
- f) weight exerted by the molten metal in the upper vessel,
- g) geometry of the upper vessel,
- h) energy used for sliding the refractory plate,
- i) total pouring time,
- j) time of full closing of the slide gate valve,
- k) time of full opening of the slide gate valve, and
- l) number of relative moves performed by the refractory plate.

37. (new) Method according to claim 35 wherein the threshold values are set in relation to local conditions of use.

38. (new) Method according to claim 35 wherein the decision is based on instant determination of plate wear.

39. (new) Method according to claim 38 wherein the refractory plate comprises throttling lips, and wherein instant wear of the throttling lips of the plate is determined by a calculation of the difference between a measured throttling rate of the valve and a calculated throttling rate.

40. (new) Method according to claim 38 wherein the refractory plate comprises throttling lips, and wherein instant wear of the throttling lips is determined by the calculation of a difference between an actual flow rate calculated for an instant position of the valve measured by an appropriate device for an instant ferrostatic pressure calculated as a function of instant metal weight and inner geometry of the upper vessel at a given time, for a given diameter of the pouring orifice and a flow rate as calculated theoretically.

41. (new) Method according to claim 38 wherein radial wear of the plate is determined by calculating a difference between an actual flow rate measured when the slide gate valve is fully opened, for an instant ferrostatic pressure calculated as a function of instant metal weight and of inner geometry of the upper vessel at this time and a flow rate calculated theoretically in the same conditions.

42. (new) Method according to claim 38 wherein an alteration of the characteristics of relative displacement of the plates is determined on the basis of energy used for the relative displacement of the plates.

43. (new) Method according to claim 35 wherein the plate use history is taken into account in the decision.

44. (new) Method according to claim 43 wherein events and incidents that occurred during the pouring are taken into account in the decision.

45. (new) Method according to claim 35 wherein the decision is based on an instant determination of the plate wear taking into account the plate use history.

46. (new) An apparatus for deciding whether to reuse or reject a refractory plate of a slide gate valve used for control of flow of a molten metal during pouring of said metal from an upper vessel towards a lower vessel, comprising
a slide gate valve configured to house a refractory plate;
a measurement device, linked to the slide gate valve, configured to accept a measurement from the slide gate valve;

an input unit configured to accept selected variables,
a memory unit, linked to the measurement device and the input unit, configured to store a measurement, variables, and threshold values,
a calculation unit, linked to the memory unit, configured to perform operations on the measurement accepted from the slide gate valve and the variables introduced through the input unit and to compare results of operations on the measurements and variables to the threshold values to produce a decision to reuse the plate if the results of the operations do not reach the threshold values, or reject the plate if the results of the operations exceed the threshold values, and an output unit, linked to the calculation unit, configured to emit a signal corresponding to the decision whether to reuse or reject the plate.